

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A catheter for medical applications, suitable for being inserted into a duct comprising a first vessel and a second vessel which branches off from said first vessel, the catheter comprising a catheter body which extends from a proximal end to a distal end, said catheter body comprising a main cavity having an inner circumference and a lateral wall that passes through the catheter body between the proximal end and the distal end, suitable for receiving a guide cable for the insertion of the catheter into the first vessel, and at least one opening, disposed on the lateral wall at the distal end and suitable for perfusing a substance, characterized in that

the catheter body, at a portion of the lateral wall comprised between said at least one opening and said distal end, comprises

a first occluding means and a second occluding means, wherein the first occluding means is suitable for at least partially occluding a gap between the catheter body and an inner wall of the first vessel, and the second occluding means contains an occluding body having a radius sized so that said occluding body is in contact with the inner circumference of the main cavity where said inner circumference of said main cavity is at its largest to prevent the flow of fluid through said main cavity and being slideably disposed within the main cavity, and an insertion cable connected to the occluding body for allowing the insertion and positioning of the occluding body within the main cavity;

said first and second occluding means defining a preferred direction of outflow of said fluid from the main cavity of the catheter body to the second vessel, through said at least one opening of the catheter body;

wherein each said at least one opening passes through said lateral wall and is in fluid communication with the main cavity,

said at least one opening is such that the area of the at least one opening is not less than the area of the cavity of the distal end of the catheter body, and

said at least one opening is not aligned with any other said at least one opening with respect to a main axis of extension of the catheter body.

2. (Previously presented) A catheter according to claim 1, wherein said first and second occluding means co-operate with each other to create a resistance to the passage of fluid through said distal end, favouring an outflow of fluid through said at least one opening.
3. (Previously presented) A catheter according to claim 1, wherein said first and second occluding means, at a portion of the catheter body comprised between said at least one opening and said distal end, substantially effect the occlusion of the first vessel into which the catheter is inserted, so as to direct a flow of fluid into the second vessel, through said at least one opening.
4. (Currently amended) A catheter according to claim 1, wherein said first occluding means comprises an inflatable element positioned around the catheter body, said inflatable element, in a rest state, adhering substantially to the catheter body, and in a working state being substantially in contact with an inner wall of said first vessel.
5. (Previously presented) A catheter according to claim 4, wherein said inflatable element is in fluid connection with the proximal end so as to be operable from said proximal end.
6. (Previously presented) A catheter according to claim 1, wherein said catheter body comprises a secondary cavity, which extends from the proximal end to the distal end and is hermetically separated from said main cavity, said secondary cavity being in fluid connection with said first occluding means so as to permit the actuation of said first occluding means.
7. (Previously presented) A catheter according to claim 6, wherein said secondary cavity is produced in a thickness of said lateral wall of said catheter body.

8. (Previously presented) A catheter according to claim 6 or 7, wherein the catheter body has an oval cross-section having a first pole more pronounced than a second pole diametrically opposed to the first pole, so that the lateral wall, at the first pole, receives said secondary cavity.

9. (Cancelled).

10. (Previously presented) A catheter according to claim 1, wherein said occluding body is substantially spherical in shape.

11. (Previously presented) A catheter according to claim 1, wherein said occluding body is substantially frustoconical in shape.

12. (Currently amended) A catheter according to claim 1, wherein said catheter body, at said distal end, comprises a portion with a tapered profile so as to reduce the main cavity of the catheter body at the distal end.

13. (Currently amended) A catheter according to claim 1, wherein said second occluding means, at said distal end, comprises a membrane suitable for at least partially occluding said main cavity and having a hole suitable for allowing the passage of the guide cable of said catheter.

14. (Cancelled).

15. (Currently amended) A catheter according to claim 1, wherein said second occluding means ~~[[are]]~~ is made of a material suitable for being sterilized.

16. (Cancelled).

17. (Cancelled).

18. (Previously presented) A catheter according to claim 1, comprising, at said proximal end, a main pathway, suitable for receiving said second occluding means and fluidly connected to said main cavity.

19. (Previously presented) A catheter according to claim 18, wherein said main pathway comprises a threaded section capable of producing a threaded connection with a corresponding threaded portion of said second occluding means.
20. (Previously presented) A catheter according to claim 1, wherein said proximal end comprises a secondary pathway, fluidly connected to said secondary cavity, and suitable for receiving at the inlet a fluid for allowing the actuation of said first occluding means.
21. (Previously presented) A catheter according to claim 1, wherein said proximal end comprises an infusion pathway, fluidly connected to said main cavity and suitable for receiving at the inlet a fluid, so as to allow the flow of the fluid from the proximal end to the distal end.
22. (Cancelled).
23. (Cancelled).
24. (Previously presented) A catheter according to claim 1, wherein each said at least one opening is disposed substantially in a helical direction with respect to the main axis of extension of the catheter body.
25. (Currently amended) A medical catheter structured for being inserted into a duct having a first vessel with an inner wall and a second vessel which branches off from the first vessel, said catheter comprising a catheter body having a main axis extending from a proximal end to a distal end, said catheter body containing:
- a. an annular lateral wall creating a main cavity having an inner circumference and being suitable for receiving a guide cable for the insertion of the catheter into the first vessel; said lateral wall containing one or more perfusion openings having a combined area greater than or equal to the area of the cavity; and said one or more perfusion openings not being aligned with one another with respect to the main axis;
 - b. a first occluding means for partially occluding a gap between the catheter body and the inner wall of the first vessel; and

- c. a second occluding means comprising:
 - i. an occluding body having a radius sized so that said occluding body is in contact with said inner circumference of said main cavity where the inner circumference of said main cavity is at its largest to prevent the flow of fluid through said main cavity, and being slideably disposed within the main cavity; and
 - ii. an insertion cable connected to the occluding body for allowing the insertion and positioning of the occluding body within the main cavity;wherein said first and second occluding means may be positioned to direct the outflow of the substance from the main cavity through the one or more perfusion openings into the second vessel.

26. (Previously presented) The catheter of claim 25 comprising a plurality of openings.

27. (Previously presented) A method for the use of a catheter according to claim 1, said catheter comprising first and second occluding means said method comprising the steps of:

inserting the catheter into a first vessel, by means of a guide cable, so that the distal end of the catheter passes beyond the branching from which starts the second vessel into which it is intended to perfuse a substance;

withdrawing the guide cable and inserting the second occluding means;

actuating the first occluding means so as to occlude at least partially the gap between the catheter body and the inner wall of the first vessel;

injecting the substance into the main cavity of the catheter so as to direct the substance from the at least one opening of the lateral wall of the catheter body to the bifurcation from which the second vessel starts.

28. (Previously presented) The method of claim 27, wherein the first vessel is a subclavian artery and the second vessel is a mammary artery.

29. (Previously presented) A method for the use of a catheter according to claim 25, said catheter comprising first and second occluding means said method comprising the steps of:

inserting the catheter into a first vessel, by means of a guide cable, so that the distal end of the catheter passes beyond the branching from which starts the second vessel into which it is intended to perfuse a substance;

withdrawing the guide cable and inserting the second occluding means;

actuating the first occluding means so as to occlude at least partially the gap between the catheter body and the inner wall of the first vessel;

injecting the substance into the main cavity of the catheter so as to direct the substance from the at least one opening of the lateral wall of the catheter body to the bifurcation from which the second vessel starts.

30. (Previously presented) The method of claim 27, wherein the first vessel is a subclavian artery and the second vessel is a mammary artery.

31. (Currently amended) A catheter for medical applications, suitable for being inserted into a duct comprising a first vessel and a second vessel which branches off from said first vessel, the catheter comprising a catheter body which extends from a proximal end to a distal end, said catheter body comprising a main cavity having a radius and a lateral wall that passes through the catheter body between the proximal end and the distal end, suitable for receiving a guide cable for the insertion of the catheter into the first vessel, and a plurality of openings, disposed on the lateral wall at the distal end and suitable for perfusing a substance, characterized in that

the catheter body, at a portion of the lateral wall comprised between said plurality of openings and said distal end, comprises

a first occluding means and a second occluding means, wherein the first occluding means is suitable for at least partially occluding a gap between the catheter body and an inner wall of the first vessel, and the second occluding means contains an occluding body having a radius of a substantially similar length as said radius of said main cavity where said radius of said main cavity is at its largest, said occluding body sized so that ~~[[it]]~~said occluding body fits snugly within the lateral wall to prevent the flow of fluid through said main cavity and being slideably

disposed within the main cavity, and an insertion cable connected to the occluding body for allowing the insertion and positioning of the occluding body within the main cavity;

said first and second occluding means defining a preferred direction of outflow of said fluid from the main cavity of the catheter body to the second vessel, through said plurality of openings of the catheter body;

wherein all the openings pass through said lateral wall and are in fluid communication with the main cavity,

said plurality of openings is such that the area of at least one of the openings is not less than the area of the cavity of the distal end of the catheter body, and

said openings are not aligned with one another with respect to a main axis of extension of the catheter body.